

15

BAYOU TECHE, LA.

L E T T E R

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

WITH A LETTER FROM THE CHIEF OF ENGINEERS, REPORT OF
PRELIMINARY EXAMINATION AND SURVEY OF BAYOU TECHE,
LA., WITH VIEW TO SECURING INCREASED DEPTH.

FEBRUARY 1, 1913.—Referred to the Committee on Rivers and Harbors and ordered
to be printed, with illustration.

WAR DEPARTMENT,
Washington, January 30, 1913.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: I have the honor to transmit herewith a letter from the Chief of Engineers, United States Army, dated 29th instant, together with copies of reports from Lieut. Col. L. H. Beach, Corps of Engineers, dated July 29, 1909, and June 10, 1911, with map, on preliminary examination and survey, respectively, of Bayou Teche, La., made by him in compliance with the provisions of the river and harbor act approved March 3, 1909.

Very respectfully,

HENRY L. STIMSON,
Secretary of War.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, January 29, 1913.

From: The Chief of Engineers, United States Army.

To: The Secretary of War.

Subject: Report on preliminary examination and survey of Bayou Teche, La.

1. There are submitted herewith for transmission to Congress reports dated July 29, 1909, and June 10, 1911, with map, by Lieut. Col. L. H. Beach, Corps of Engineers, on preliminary examination

and survey, respectively, of Bayou Teche, La., with a view to securing increased depth, called for by the river and harbor act approved March 3, 1909.

2. Bayou Teche is a stream in southern Louisiana, having its source in Bayou Courtableau in St. Landry Parish, and flows in a southeasterly direction a distance of 124 miles, joining the lower Atchafalaya River about 12 miles above Morgan City, La. The available depth in the Atchafalaya from mouth of the Teche to the Gulf is about 20 feet. The Teche lies in the drainage area of the Atchafalaya River, which empties into the Atchafalaya Bay, an inlet of Gulf of Mexico.

3. The existing project for improvement of Bayou Teche provides for a 6-foot navigation to Arnaudville, 106 miles above the mouth, by dredging, removal of snags, and the construction of a lock at Key-stone. The total expenditures on this and earlier projects to June 30, 1912, were approximately \$216,000. The commerce of the bayou now amounts to about 1,000,000 tons per annum, having a value estimated at \$6,500,000. The greater part of this commerce pertains to the lower portion of the stream, where the existing channel facilities have proven to be inadequate.

4. The district officer is of opinion that some relief from existing conditions is necessary, and after consideration of a number of suggested depths and widths he reaches the conclusion that any depth in excess of 8 feet could be obtained only at a cost disproportionate to the benefits to be derived therefrom. He is of opinion, however, that the construction of a channel 8 feet deep and 100 feet wide from the mouth to New Iberia, and thence 6 feet deep and 60 feet wide to the lock site, at an estimated cost of \$551,550, is warranted under certain conditions of local cooperation. The district officer also gives consideration to the advisability of extending navigation from the lock site to the head of the stream at its junction with Bayou Courtableau. Estimates of \$359,150 and \$337,250 are submitted for locks of 8 feet and 10 feet lift, respectively, the latter being the cheaper on account of the smaller amount of auxiliary dredging required. While some opposition to this improvement in connection with a proposed dam in the Courtableau was manifest at the time of the submission of the report on the survey, the district officer expressed the opinion that in view of the important public benefits to be expected, this opposition should not be allowed to prevail, and he therefore recommended that the work be undertaken.

5. These reports have been referred, as required by law, to the Board of Engineers for Rivers and Harbors, and attention is invited to its report herewith, dated December 23, 1912. At the request of the board, certain supplemental estimates were procured from the district officer, and the subject has been given extended consideration in view of the uncertainty which existed regarding the ultimate relation of the upper section of the bayou and the improvements proposed by the district officer to the extensive drainage projects under consideration by local authorities. As explained by the board, this question has now adjusted itself, and certain local drainage districts have been authorized by the Secretary of War to close Bayou Courtableau near its mouth by extending a levee along the west bank of the Atchafalaya with the understanding that they will provide a suitable boat outlet from this bayou into Bayou Teche, either by a lock and dam or by dredging. It thus appears that the utilization

of Bayou Teche as an outlet for the Courtableau will probably be accomplished by those concerned and in such a manner as to afford the necessary navigation facilities in this portion of the stream. The board therefore expresses the opinion that it is not advisable for the United States to undertake any improvement of the Teche above the lock site. The board believes, however, that it is advisable for the United States to provide a channel 8 feet deep and 80 feet wide up to New Iberia, and thence 6 feet deep and 60 feet wide to the lock site, at a total estimated cost of \$315,000, and \$3,000 annually for maintenance, contingent upon the donation by local interests of the lands necessary for turning basins and for dumping places along the banks.

6. After due consideration of the above-mentioned reports I concur in general with the views of the Board of Engineers for Rivers and Harbors, and therefore, in carrying out the instructions of Congress, I report as follows: That the improvement by the United States of Bayou Teche with a view to securing increased depth is deemed advisable so far as to secure an available channel depth of 8 feet and a channel width of 80 feet from the mouth to New Iberia, and thence 6 feet deep and 60 feet wide to the lock site at Keystone, increased at entrances and on curves, following in general the methods described in the report of the district officer as modified by the report of the Board of Engineers for Rivers and Harbors, at an estimated cost of \$315,000 for first construction and not less than \$3,000 annually for maintenance, these estimates being based on the supposition that the construction work will, as now seems desirable and advantageous, be prosecuted under a first appropriation of \$100,000 and subsequent appropriation of about \$107,500 per year for two years.

W. H. BIXBY,
Chief of Engineers, United States Army.

REPORT OF BOARD OF ENGINEERS FOR RIVERS AND HARBORS ON SURVEY.

[Second indorsement.]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
December 23, 1912.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

1. Bayou Teche has its source in Bayou Courtableau and flows in a southeasterly direction for about 124 miles to where it joins the lower Atchafalaya River about 12 miles above Morgan City. At the present time there is an available channel of about 7 feet in depth and 60 feet in width to Franklin, 16 miles; 6 feet by 40 feet to Jeanerette, 42 miles; 5½ feet by 40 feet to New Iberia, 54 miles; and 4 feet by 30 feet to the lock site, 72 miles above the mouth.

2. The lock and dam now under construction will give a channel 6 feet in depth and a width of about 60 feet up to Arnaudville, 106 miles above the mouth. The pool will extend to Leonville, 114 miles above the mouth, leaving a distance of 10 miles to the Courtableau, over which reach the bed of the Teche at low water consists of a series of pools separated by shoals which are at an elevation above low water in the Courtableau.

3. Owing to the physical characteristics of the stream, the district officer divides it for convenient consideration into two sections:

A.—Mouth to the lock site, 72 miles.

B.—Lock site to head, 52 miles.

4. *A. Mouth to the lock site.*—This section of the Teche now carries practically all of the commerce of the stream. The banks are lined with plantations, and there are a number of small towns, the principal ones being New Iberia, Jeanerette, and Franklin. The commercial statistics for 1909 give the shipments as 99,090 tons, with a value of \$3,189,435, and the receipts as 900,035 tons, with a value of \$3,422,080, making a total of 999,125 tons, with a value of \$6,611,515. The largest item of commerce is logs, of which there is a tonnage of 757,790, with a valuation of \$1,653,375. Deducting this from the total leaves 241,335 tons of miscellaneous commerce valued at \$4,958,140. In a subsequent communication the district officer gives the total tonnage for 1911 as 1,016,116, with a valuation of \$6,581,700. There has been expended on this stream to June 30, 1912, approximately \$260,000. Formerly the commerce of the Teche was largely local, but with the opening of the Plaquemine route, a boat and barge line has been established between New Iberia and New Orleans and is now operating regularly and is taxed to the full capacity of its equipment. During the past season three lines of boats and as many independent steamers handled sugar between Teche points and New Orleans. The district officer believes that a channel at least 8 feet in depth, with a bottom width of 100 feet, should be made available to New Iberia in order to meet the demands of navigation. While the lock to be built will have a depth of 8 feet over the sills and the pool will give an 8-foot navigation for several miles above the lock, on account of the much smaller tonnage above New Iberia the district officer believes that a 6-foot channel, with a bottom width of 60 feet, will be sufficient for some years above New Iberia. Turning basins are proposed at Franklin, Jeanerette, New Iberia, and Loreauville. The estimate for the proposed 8-foot channel to New Iberia and 6-foot channel to the lock site is \$551,550, and the district officer believes this expenditure is warranted, although he believes it should be coupled with the proviso that the lands necessary for turning basins and dumping places along the banks for dredge material should be furnished without cost to the United States.

5. *B. Lock site to head.*—There is very little commerce on this section of the Teche and none above Arnaudville, and any improvement by the General Government must be based on prospective commerce. Based on this commerce alone, the district officer states that the improvement would hardly be warranted at this time, but considering that it will serve as an outlet to commerce on Bayou Courtableau and open up 82 miles of waterway will ultimately be advisable. Two plans are outlined for the improvement of this reach, to cost, respectively, \$359,150 and \$337,250.

6. In addition to the above estimates, the district officer in subsequent communications has submitted the following at the request of the board:

Channel 8 feet deep and 80 feet wide to New Iberia.....	\$255, 000
Channel 6 feet deep and 80 feet wide to New Iberia.....	75, 000
Channel 6 feet deep and 60 feet wide from New Iberia to the lock site.....	60, 000

The estimate for maintenance submitted by the district officer is \$3,000 per year. The board is inclined to believe that this estimate may prove insufficient.

7. At the request of the board, interested parties were invited to submit their views regarding the necessity and advisability of the United States undertaking additional improvement of the Teche. A number of communications have been received and given consideration, and on December 16, 1912, Hon. R. F. Broussard, M. C., appeared in behalf of the improvement.

8. The commerce of the bayou now amounts to about 1,000,000 tons per annum, valued at approximately \$6,500,000. This large and important commerce fully justifies such reasonable facilities for navigation as can be provided and maintained at commensurate cost. Decision as to the advisability of improving the river above the lock site has been complicated and delayed by the uncertainty as to the ultimate relation of this section to the extensive drainage projects under consideration by local authorities. This question, however, has recently been settled. At the request of the Board of Commissioners of the Atchafalaya Basin Levee District and of the Red River, Atchafalaya, and Bayou Boeuf Levee District, assisted by the Louisiana State Board of Engineers, the Secretary of War has granted permission to close Bayou Courtableau near its mouth by extending a levee along the west bank of the Atchafalaya, and as stated by the district officer in a supplemental report on the improvement of Bayou Courtableau, it appears that the utilization of Bayou Teche as an outlet for the Courtableau will probably be accomplished by those concerned and in such a manner as to afford the necessary navigation facilities in this portion of the stream.

9. In view of the situation presented above, the board is of opinion that it is not advisable for the United States to undertake any improvement of the Teche above the lock site. It believes, however, that the commercial importance of this stream justifies some increase of navigation facilities below this point and that it is advisable for the United States to provide a channel 8 feet deep and 80 feet wide up to New Iberia and thence 6 feet deep and 60 feet wide to the lock site, at a total estimated cost of \$315,000 and the necessary amount annually for maintenance, contingent upon the donation by local interests of the lands necessary for turning basins and for dumping places along the banks. The initial appropriation should be \$100,000, with subsequent appropriations sufficient to complete the work in three years.

10. In compliance with law, the board reports that except as contemplated by the above recommendations there are no questions of terminal facilities, water power, or other subjects so related to the project proposed that they may be coordinated therewith to lessen the cost and compensate the Government for expenditures made in the interests of navigation.

For the board:

WM. T. ROSSELL,
Colonel, Corps of Engineers,
Senior Member of the Board.

PRELIMINARY EXAMINATION OF BAYOU TECHE, LA.

WAR DEPARTMENT,
ENGINEER OFFICE, UNITED STATES ARMY,
New Orleans, La., July 29, 1909.

SIR: 1. This office was charged, by letter from the Chief of Engineers of March 8, 1909, with the report upon the preliminary examination of Bayou Teche, La., with a view to securing an increased depth, as directed by the river and harbor act of March 3, 1909.

2. Bayou Teche is not a stream of flowing water in the ordinary acceptation of the term, and resembles few other waterways of the country. It is actually a channel located upon the summit of a ridge. The banks of the bayou are from 100 feet to 1,000 feet wide, beyond which the land slopes away from the bayou on the east toward the Atchafalaya, on the west toward the Vermilion River. Owing to the flatness of the country the slope is, however, very slight. The Teche may be said to begin in the southeastern portion of St. Landry Parish, adjacent to Bayou Courtableau, and extends east of south through St. Martin and St. Mary Parishes for a distance by the channel of about 124 miles to the Atchafalaya, 12 miles above Morgan City. The section through which it passes has a soil of proverbial fertility and is one of the richest agricultural portions of the country. The Teche has been the subject of several previous examinations and reports, as follows:

Date.	Surveys.	A. R., C. of E.	Page.
1870	Survey for removing obstructions.....	1870	347-351
1879	For improvement by locks and dams.....	1880	1166
1882	{Charenton Canal to Port Barre.....	1883	1113
	{Improvement by locks and dams.....	1885	1397
1885	Charenton Canal to mouth.....	1885	1398
1886	For slack-water navigation in upper Teche.....	1886	1248
1889	Examinations with a view of putting in locks and dams.....	1889	1515
1895	St. Martinville to Port Barre.....	1895	1788
1897	St. Martinville to Port Barre for 6-foot channel.....	1897	1783
1905	do. ¹	1905	1454

¹ (H. Doc. No. 527, 59th Cong., 1st sess.)

3. The present project, adopted in 1891, provided for the removal of obstructions between St. Martinville, La., and the mouth of the bayou, a distance of about 80 miles. This project was modified by the river and harbor act of March 2, 1907, so as to provide a 6-foot navigation to Arnaudville by the construction of a lock and dam about 4 miles below St. Martinville. The work of construction has not yet been done, owing to legal complications. Navigation has been possible to Breaux Bridge by shallow-draft boats during high-water stages. At low water New Iberia is practically the head of navigation, although some small boats succeed occasionally in reaching St. Martinville.

4. The bayou has gradually shoaled until its depth is now considerably less than what it was 20 or 30 years ago. This is probably due to the cultivation of its banks and the soil being gradually washed into the bayou. The Teche does not possess sufficient current to enable it to scour away the material carried in in this manner. Its water shed is very limited, being practically confined to the sloping

banks of the bayou. The crest of these banks varies from 100 feet to approximately 1,000 feet in distance from the stream, while beyond the crest the land slopes from the bayou. The rainfall on this very limited watershed gives no supply, except the immediate run-off at the time of rainfall. There is no conservation of rainfall, as the drainage is in all cases directly into the bayou. Some water is obtained from Bayou Courtableau when that stream rises to a greater height than 8 feet. A small amount of water is sometimes obtained from the Vermilion River through Bayou Fusilier, a channel connecting the Teche with the Vermilion. When the latter stream is higher than the Teche it contributes some of its waters, but when the Vermilion is lower than the Teche, Bayou Fusilier serves as an outlet. At low water the Teche is practically a slack-water route, the slight current in the stream following the ebb and flow of tide. As normal tides in the Gulf of Mexico are but little more than 1 foot, this cause does not produce much flow.

5. The relief requested by parties interested in the navigation of the waterway and commercial interests along the bayou is that the channel be dredged so as to provide a depth of 15 feet to New Iberia, La. The object of this depth is to permit coasting schooners to enter the bayou so that its products can be shipped direct from its banks to the various markets.

6. The commerce of the Teche is, even in its present condition, of large magnitude, and there is every reason to believe that it would be increased could a greater depth be afforded. The annual commerce is practically as shown in the following table:

	Tons.	Value.		Tons.	Value.
Sawlogs.....	547,120	\$1,865,929	Machinery.....	1,410	\$136,900
Lumber.....	60,875	218,850	Fuel oil.....	86,000	280,000
Cotton.....	1,086	213,450	Fertilizer.....	3,720	74,400
Cottonseed products.....	6,187	102,747	Coal.....	5,400	30,000
Rice.....	2,940	113,081	Cooperage.....	4,860	87,480
Sugar.....	48,111	3,848,880	Merchandise.....	18,090	698,371
Sugar cane.....	70,000	245,000			
Molasses.....	9,036	307,224	Total.....	864,835	8,222,312

7. The class of tonnage produced along the Teche is of such a nature that barge transportation to Morgan City and reshipment of the bulky freight at that point would place upon the shipper such an increased expense that the method practically becomes impracticable. The greatest item of seagoing tonnage originating on the Teche is lumber of various kinds. With 15 feet of water in the bayou this could be shipped directly to eastern ports, these being the points to which it now goes by a combination of routes. There are numerous sawmills along the bayou. The product of 10 of these mills, from which it was possible to obtain statistics, is as follows:

	Feet.	Tons.	Value.
Logs towed to mills.....	143,533,000	547,120	\$1,865,929
Cut of lumber.....	140,470,000	351,175	3,511,750
Shingles.....	194,100,000	29,115	526,775
Laths.....	53,533,000	13,383	160,599
Factory work.....			433,500
Cords of wood for fuel.....	30,050		60,100

8. The largest agricultural interest along the Teche is the raising of sugar cane. The sugar plantations are large and most of the factories are located along the bayou. There are, below St. Martinville, 37 large factories on its banks. A statement concerning the cane growers and factories in the parishes traversed by the bayou and tributary to it is as follows:

Parish.	Cane growers.	Sugar factories.	Daily capacity.
			<i>Tons.</i>
St. Martin.....	14	3	2,400
Iberia.....	51	16	9,100
St. Mary.....	79	28	16,840
Totals.....	144	47	28,340
Annual tonnage of cane.....			3,177,000

Sugar produced therefrom, 545,000,000 pounds, or 272,500 tons.

Almost this entire tonnage is grown along the banks of the Teche, with an average haul of not more than 1 mile of the water's edge. If the Teche were improved, the sugar planters could transport a larger proportion of the cane to central sugar mills, which would permit the use of larger barges than is possible at present. As the value of cane is seldom over 1½ cents per pound; it is readily seen that only a slight expense for transportation destroys its profitable value. With greater depth of water in Bayou Teche, cane could be taken to the mills much more cheaply and the products carried away at much less expense.

9. Another important feature of the deepening would be the decreased cost of fuel. Although the lumber and sugar mills use waste products for a large part of their fuel, a reduction upon the price of oil and coal would still be of great benefit.

10. Owing to the great demand for cars during the fall months to move the crops of southern Louisiana, the railroads find it impossible to supply the number necessary to properly handle the business. It is believed that they make every effort, but it is manifestly impossible for them to keep on hand a large number of cars to be used from October to January only, and which will remain idle during the rest of the year. The result, however, is that all business during that period is more or less hampered by inability to obtain the requisite number of cars to handle the commerce.

11. The following list shows the recent experience of one of the large sawmills upon the Teche. The capacity of the mill was the same during October, November, and December as during the other months. The shipments were, however, limited by the inability of railroad companies to furnish cars:

	Cars.
January.....	104
February.....	121
March.....	151
April.....	127
May.....	131
June.....	121
July.....	93
August.....	108
September.....	95
October.....	52
November.....	57
December.....	55
January.....	107

12. Another illustration as to the manner in which shortage of cars retards development of the locality is shown by the experience of the salt mines at Weeks Island, near the Teche. During the year 1906 the output was 94,000 tons, and for 1907 the output was only 84,000 tons, the difference being due entirely to inability of the company to obtain necessary cars to ship any greater amount. It is estimated that with proper transportation facilities these mines would ship probably 200,000 tons per year.

13. The manner of the improvement of the Teche is one requiring careful study. The State levee boards have now under consideration the protection of the country between the Teche and the Atchafalaya. This can be done only by one of two methods, one being by a levee along the west bank of the Atchafalaya, the other and more expensive being by a levee along the south bank of the Courtableau and the west bank of the Atchafalaya below that stream. The first method would involve closing the mouth of the Courtableau and, of necessity, diverting its waters through the Teche. This has been under consideration by the State levee boards for some time, but no decision has yet been reached. It is, of course, understood that the consent of the United States is necessary to such action.

14. The character of the stream prevents any development of water power.

15. It is impossible at this time, and previous to a survey, to make any statements concerning terminal facilities.

16. The only other subject connected with the improvement of this stream is the treatment of Bayou Courtableau, a matter so intimately connected with the improvement of the Teche that the two must necessarily be considered together.

17. The present and prospective commerce of the Teche is of such an amount and of such value that it appears entitled to all the assistance which the General Government can render. The waterway appears highly worthy of improvement, and it is recommended that a survey, to determine the method and cost of such improvement, be made. As this survey will involve an examination of the basin of the Courtableau and a determination of the amount of water which would be turned from that stream into the Teche should connection be made between the two bayous, it is believed that the sum of \$2,500 may be needed, and an allotment of this amount is requested.

Respectfully submitted.

LANSING H. BEACH,

Lieutenant Colonel, Corps of Engineers.

The CHIEF OF ENGINEERS, UNITED STATES ARMY.

[Second indorsement.]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS.

Washington, D. C., August 9, 1909.

1. Respectfully returned to the Chief of Engineers, United States Army.

2. Bayou Teche is an important stream on which is carried an extensive and valuable commerce. It is now under improvement to St. Martinville under a project for the removal of obstructions, and the act of March 2, 1907, provided for the construction of a lock about 4 miles below St. Martinville to carry a slackwater depth of 6 feet to Arnaudville.

3. Navigation interests now desire a greater depth in the lower part of the bayou as far up as New Iberia. The district officer, who is also division engineer, believes this waterway worthy of improvement, and recommends that a survey be made to determine the method and cost of the improvement.

4. In the opinion of the board the commercial and navigation interests involved are sufficient to warrant a full investigation of their needs. It therefore concurs in recommending that a survey be authorized to determine the cost and advisability of further improvement. This stream is connected at its head with Bayou Courtableau, and it is understood that the district officer will give consideration to that stream in connection with his further report on Bayou Teche.

For the board:

D. W. LOCKWOOD,
Colonel, Corps of Engineers,
Senior Member of the Board.

[Third indorsement.]

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, August 16, 1909.

1. Respectfully submitted to the Secretary of War.
2. This is a report on preliminary examination of Bayou Teche, La., authorized by the river and harbor act of March 3, 1909.
3. Inviting attention to the report of the Board of Engineers for Rivers and Harbors in the preceding indorsement, I recommend that a survey of the locality, as proposed, be authorized.

FREDERIC V. ABBOT,
Acting Chief of Engineers.

[Fourth indorsement.]

WAR DEPARTMENT, *August 17, 1909.*

Approved.

JOHN C. SCHOFIELD,
Assistant and Chief Clerk
(For the Secretary of War in his absence).

REPORT ON SURVEY OF BAYOU TECHE, LA.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
New Orleans, La., June 10, 1911.

SIR: 1. I have to submit the following report of survey of Bayou Teche, La., being the continuation of the preliminary examination ordered by act of Congress dated March 3, 1909, with a view to securing increased depth in that stream. A survey was authorized by department letter of August 20, 1909, and the delay in reporting the result of the survey is due to an effort to adjust matters in connection with the improvement of Bayou Courtableau, the improvement of both streams being so intimately connected that the best plan for

each involves work in the other. In this connection, attention is respectfully invited to the report of the survey of Bayou Courtableau submitted under this date.

2. Bayou Teche at the present time has a channel with an available depth of about 10 feet, at mean low tide, at its mouth; decreasing to about 7 feet at Franklin, 16 miles above its mouth; to about 6 feet at Jeanerette, 42 miles above the mouth; to about $5\frac{1}{2}$ feet at New Iberia, 54 miles; and to about 4 feet at the lock site, 72 miles above the mouth. The available width of the 4-foot channel at the lock site is about 30 feet; of the $5\frac{1}{2}$ -foot channel at New Iberia, about 40 feet; of the 6-foot channel at Jeanerette, about 40 feet; of the 7-foot channel at Franklin, about 60 feet; and of the 10-foot channel at the mouth, about 75 feet.

3. The lock and dam now under construction at Keystone plantation will give a channel 6 feet in depth, with an available width of about 60 feet, from the lock site to Arnaudville, 106 miles above the mouth of the bayou. The surface of the pool formed by this lock and dam will be at an elevation of 8 feet above mean tide, and the pool surface will extend as far up as Leonville, 114 miles above the mouth of the Teche.

4. From this point to Bayou Courtableau, a distance of 10 miles, the bed of the Teche, at low water, consists of a series of pools separated by shoals, which are dry at low water, the highest point of the bed of the stream between Leonville and the Courtableau being 15.6 feet above mean tide and 5.6 feet above low water in the Courtableau, as the water in the latter stream is held at an elevation of 10 feet above mean tide by the bar which has formed just above its mouth. The Teche above Leonville has a minimum channel width of about 30 feet and the bed of the stream in many places is filled with a growth of brush and trees. The banks are high and average 20 feet above the bed of the stream.

5. The improvement of the Teche from its mouth to its head, due to the character of the stream and the nature of the improvements already begun, may be most advantageously considered in two parts, viz:

A—Improvement from mouth to New Iberia, 54 miles.

B—Improvement from New Iberia to head, 70 miles.

A—IMPROVEMENT FROM MOUTH TO NEW IBERIA, 54 MILES.

6. This portion of the Teche, according to reports, originally had an available depth of 8 feet and over at low water, but as the land along the stream began to be cultivated drainage ditches were led into it which carried in considerable sediment, and this, together with the wash of the banks by passing boats, has caused the bayou to shoal until its condition at present is as stated above.

7. This section of the Teche at the present time carries practically all of the commerce with which the stream is credited, the usual head of navigation being at St. Martinville, 3 miles above the lock site, although boats occasionally run to Breaux Bridge, 16 miles farther upstream.

8. The stream is lined with plantations, and there are numerous towns located on its banks, the principal ones being New Iberia, with

a population of 7,500; Jeanerette, with a population of 3,000; and Franklin, with a population of 3,000. These towns contain many sawmills which depend largely on the Teche for their supply of saw-logs, these being brought by water from the timberlands in the vicinity of Grand Lake. Numerous mills for grinding sugar cane are located on the bayou, and these receive the cane largely by water and ship much of their product in the same way, and a large amount of the oil which is used for fuel is delivered at these mills by water.

9. The commercial statistics for the calendar year 1909, which is the last year for which full returns have been received, but which differ but little from those for 1911, are as follows:

	Tons.	Value.		Tons.	Value.
SHIPMENTS.			RECEIPTS.		
Sugar.....	25,693	\$2,313,370	Machinery.....	889	\$88,900
Molasses.....	11,782	353,460	Fertilizers.....	200	4,000
Cotton and cottonseed prod- ucts.....	4,028	87,900	Cooperage.....	120	20,400
Cord wood.....	6,145	18,435	Coal.....	3,850	15,400
Rice.....	1,785	71,400	Fuel oil.....	83,000	606,000
Junk.....	430	4,300	Cane.....	42,600	213,000
Brick.....	242	1,100	Logs.....	757,790	1,653,375
Lumber.....	2,828	28,280	Lime and cement.....	10	100
Machinery.....	67	6,240	Gravel and sand.....	2,500	5,000
Cane.....	43,600	178,000	Corn and oats.....	491	10,180
Shingles.....	75	1,500	Feed, ground.....	600	12,000
Potatoes.....	15	450	Brick.....	50	225
Crossties.....	1,200	5,000	Miscellaneous.....	7,935	793,500
Miscellaneous.....	1,200	120,000			
Total shipments.....	99,090	3,189,435	Total receipts.....	900,035	3,422,080
			Total shipments and re- ceipts.....	999,125	6,611,515

10. The commerce in 1899 amounted to some 273,000 tons, and in the 10 years from 1899 to 1909 it will be seen that the tonnage has quadrupled. The commerce of the Teche for 1909 was carried on principally in the 54 miles below New Iberia, and, assuming an average haul of 27 miles, it will be seen that the ton-mileage for the past year can be fairly accurately given as 30,000,000 ton-miles. Commerce is carried on by means of stern-wheel steamboats and barges, the number engaged in the trade during 1909 being 32 steamboats and 89 barges. In addition, there are numerous gasoline boats carrying small cargoes of oysters, fish, etc., and making many trips up and down the stream, but as these boats are owned mainly by individuals who keep no records as to the business done, it has been impossible to incorporate the tonnage of freight carried by them in the statistics given above.

11. The annual value of water transportation on Bayou Teche in decreasing the cost of its principal products, lumber and sugar, is difficult to ascertain accurately, but is undoubtedly more than has thus far been expended by the United States in its improvement and maintenance, there having been expended to June 30, 1909, approximately, \$100,000.

12. The larger portion of the commerce on the bayou may be considered as being purely local, but, with the opening of the Plaquemine route, a boat and barge line has been established between New Iberia and New Orleans and is now making one regular trip per week and is taxed to the full capacity of its present equipment. During the past season for the movement of sugar products there were three lines of

boats and as many other independent steamers plying between New Orleans and Teche points.

13. The difficulties attending navigation in this portion of the Teche are those due to its small cross section, which prevents barges from being loaded to their full capacity and the larger boats from making full speed, due to the small depth of water under their hulls. Stern-wheel steamboats with a length of 100 feet, a beam of 20 to 25 feet, and a draft of 3 feet can not make more than half speed in the bayou where a depth of 4 to 6 feet exists, due to the squatting of the boat as the water is driven back by the action of the wheel. Turning basins are also needed at various places along the bayou, particularly near the towns, so as to enable the larger boats to turn without difficulty.

14. Some relief from existing conditions is necessary, and a better and more easily navigated channel should be secured. In view of the present commerce and the prospective water-borne traffic from this section through the Morgan City-Plaquemine route to New Orleans, and to eastern ports by sea via the channel from the Atchafalaya River to the Gulf, it is believed that a channel of at least 8 feet in depth should be available from the mouth to New Iberia. This channel should have a bottom width of 100 feet with side slopes of 1/1, and turning basins not less than 200 feet wide and 400 feet long should be dredged at or near the towns of Franklin, Jeanerette, and New Iberia. The lock to be built on Bayou Teche will have a depth of 8 feet over the sills, and the pool formed by the lock and dam will give an 8-foot waterway for several miles above the lock site, but, owing to the smaller amount of traffic above New Iberia and the large amount of excavation involved, it is believed that a 6-foot channel with a bottom width of 60 feet and side slopes of 1/1 will be sufficient for some years to come above New Iberia. A turning basin 150 feet wide and 300 feet long at or near Loreauville, about 11 miles above New Iberia, should be provided. This width of channel will enable any two boats that can go through the lock, which will have a width of 36 feet, to pass in the bayou.

15. Such a channel will require dredging from a point one-half mile above the mouth of the bayou to the lock site, the estimated quantity of excavation being 3,677,000 cubic yards. If the depth of 8 feet were carried to Keystone Lock the excavation required would be 4,170,000 cubic yards.

16. A channel 10 feet deep from the mouth to New Iberia and 8 feet from New Iberia to the lock site would require the excavation of about 5,770,000 cubic yards.

17. A channel 15 feet deep from the mouth to New Iberia and 8 feet deep from New Iberia to the lock site would require a total excavation of approximately 12,500,000 cubic yards.

18. A channel 15 feet deep in the lower Teche is desired by certain interests along the bayou, on the ground that coasting schooners could then be brought up the stream to the mills and there loaded with lumber or other commodities for shipment to eastern ports. There is at present an outlet to the Gulf by way of the Atchafalaya River with an available depth of 14 feet, which is now being deepened by the United States to 20 feet. After the completion of this channel the draft of the larger vessels entering the port of Morgan City would

be too great to enable them to use a 15-foot channel in the Teche. While a 15-foot channel might benefit certain interests along the Teche, other interests gain but little, if any, by the increase in depth over an 8-foot channel, while the cost would be fully four times as great. A 15-foot channel would also be more difficult to maintain, as there would be an increased tendency of the banks to cave.

19. For these reasons a 15-foot channel in Bayou Teche is not considered worthy of construction by the United States.

20. For a 10-foot channel in the Teche below New Iberia the argument may be advanced that greater economy of transportation will result by enabling barges to be loaded that much deeper and also that, since the Morgan City-Plaquemine route to New Orleans has a depth of 10 feet at low water, the depth of the channel in the Teche should be the same.

21. The waterways of the Morgan City-Plaquemine route, however, except in Bayou Plaquemine, Bay Natchez, and Flat Lake, had a natural depth of 10 feet and over, and the dredging of about 2,000,000 cubic yards in this case over a distance of about 13 miles gave a 10-foot waterway about 80 miles long. In the Teche a 10-foot channel for 54 miles and an 8-foot channel for 18 miles farther will require dredging throughout the entire distance and the excavation of 5,770,000 cubic yards of material.

22. The benefit which would result to navigation by having a depth of 10 feet instead of 8 feet, while considerable, could be secured only at a disproportionate cost, for not only is the amount of excavation much greater, but on account of the increased difficulty of disposing of the material the deeper channel will cost more per cubic yard.

23. An 8-foot channel, as described above, from the mouth to New Iberia and 6 feet from there to the lock site is therefore believed to be all that should be undertaken by the United States at this time.

24. The material to be excavated consists of a fairly soft mud mixed in many places with a considerable quantity of trees, logs, bark, etc. The banks of the stream do not afford very favorable opportunities for disposing of the dredged material, in many cases being cultivated to the water's edge, but places generally exist on one bank—sometimes on one side, sometimes on the other, except in the towns—where dredged material can be deposited. It is believed that the people along the bayou, appreciating the importance of the work, will assist in every way possible.

25. The estimated cost of the dredging, due largely to lack of facilities for disposition of material, must be placed at 15 cents per cubic yard, which will make the cost of the 8-foot channel from the mouth to New Iberia as follows: Three million six hundred and seventy-seven thousand cubic yards, at \$0.15, \$551,550.

26. The expenditure of this sum by the United States is believed to be warranted by the benefits to be derived, though it is thought that its expenditure should be conditioned on local interests securing for the United States the land needed for turning basins and providing suitable dumping places along the banks of the bayou without charge to the Government; also that the towns of New Iberia, Jeanerette, and Franklin should guarantee the erection of suitable public landings or wharves, in order that the greatest amount of benefit can be secured from the proposed improvement.

B—IMPROVEMENT FROM NEW IBERIA TO HEAD, 70 MILES.

27. This section of the stream was formerly navigated during periods of high water when the water in Bayou Courtableau reached a sufficient elevation so as to flow down Bayou Teche.

28. Some work of improvement was carried on by the United States in 1885 and 1886 and consisted in the removal of trees, etc., from the bed of the bayou so as to benefit such navigation as existed during the high-water season.

29. As above indicated, it is at present under improvement by the United States by the construction of a lock and dam about 3 miles below the town of St. Martinville.

30. There is very little commerce on this section of the Teche at the present time and none whatever above Arnaudville, so that any improvement by the General Government must be based on the prospective commerce solely.

31. The banks of the Teche above the lock site, while not so thickly settled as those below, nevertheless support a large population and are extensively cultivated. The principal towns are St. Martinville, with a population of 2,500; Breaux Bridge, with a population of 1,700; Arnaudville, with a population of 800; and Leonville, with a population of 400.

32. Based on the prospective commerce of the Teche alone, the outlay necessary to carry navigation from Arnaudville to the head of the Teche would hardly be warranted at this time, but, considering that it will serve as an outlet to commerce on Bayou Courtableau and open up 82 miles of waterway now closed, it is believed that the extension of 6-foot navigation to the latter stream will be ultimately advisable.

33. The conditions on Bayou Courtableau are described in a report on that stream submitted on this date, to which attention is respectfully invited, and it is not believed necessary to repeat them here.

34. The plan of improvement for this section of the Teche was proposed in a report submitted December 26, 1905, and printed in House Document No. 527, Fifty-ninth Congress, first session.

35. In brief, that plan proposed the extension of 6-foot navigation to Bayou Courtableau by the construction of a lock and dam at Arnaudville with a lift of 10 feet and by the dredging of about 331,000 cubic yards of material in order to obtain a channel 60 feet wide and 6 feet deep in this pool.

36. This pool would be supplied by water from Bayou Courtableau, the low-water surface of this stream being held at an elevation of between 18 and 21 feet above mean tide by a dam below the head of the Teche.

37. The estimated cost of the above work in Bayou Teche and Courtableau is as follows:

(a) *For a lock and dam at Arnaudville with 8-foot lift, crest of dam at an elevation of 16 feet and the Bayou Courtableau Dam at 19 feet:*

Lock and dam at Arnaudville.....	\$180, 000
Movable dam in Bayou Courtableau.....	47, 000
Clearing the Teche.....	5, 000
Dredging Bayou Teche, 525,000 cubic yards, at 18 cents.....	94, 500
Contingencies, about 10 per cent	32, 650
Total.....	359, 150

(b) *For a lock and dam at Arnaudville with 10-foot lift, crest of dam being at 18 feet above mean Gulf level and crest of Courtableau Dam 21 feet:*

Lock and dam at Arnaudville.....	\$190, 000
Movable dam in Bayou Courtableau.....	52, 000
Clearing the Teche.....	5, 000
Dredging Bayou Teche, 331,000 cubic yards, at 18 cents.....	59, 580
Contingencies, about 10 per cent.....	30, 670
Total.....	337, 250

38. The above plan is considered the best and most economical that can be adopted for extending navigation to the Courtableau.

39. To attempt to extend 6-foot navigation by dredging alone from Arnaudville to the Courtableau would involve the excavation of some 2,500,000 cubic yards of material and the construction of a lock at the Courtableau to hold up the pool of that stream and to regulate the flow into the Teche.

40. The above plan, if adopted, will, with the dam in the Courtableau, extend 6-foot navigation from Arnaudville to Washington on the Courtableau, and to a considerable distance up Bayous Cocodrie and Boeuf, and not only give water transportation to people on the upper Teche, but, also, afford an outlet for the commerce of the country bordering the Courtableau.

41. Incidentally, the flow of fresh water from the Courtableau down the Teche will give a good current in the latter stream which will be beneficial not only for its maintenance but also in that it will sweep out of the bayou the impurities which necessarily enter it, particularly at the towns, and which, owing to its sluggish current or at times absence of current, are not at present removed.

42. The incidental question of land reclamation is of great importance, and the value of the lands which could be drained and secured from overflow by the adoption of the plan would be many times the amount of the cost involved, while the area would amount to some millions of acres. Another very important feature of the improvement would be its effect upon Bayou Teche. That stream is now practically a tide-level waterway and has current only after times of considerable rainfall. The intercoastal canal will soon cut across the country to the west of the Teche, and on account of the intersected bayous which connect with Cote Blanche Bay the salt water of the Gulf of Mexico will flow in flood tides into the Teche and seriously interfere with the raising of rice and the use of water in the boilers of the manufacturing plants and mills along the stream. This trouble has already occurred in the vicinity of Franklin, owing to the Hanson Canal a few miles below that town. The owners of the canal have kept their lock closed as much as possible in order to avoid the inflow of salt water, but even under these circumstances some of the mills at Franklin have had to close down at times on account of the foaming in the boilers. The sanitary condition of the water is extremely bad, so bad that at times stock have been killed by drinking it. A steady flow of water from the Courtableau would avoid all these inconveniences and would materially assist in improving the sanitary condition in the entire country along the banks of the Teche. It should be stated that any plan involving the junction of Bayou Courtableau and the Teche has met with considerable opposition from some people on the former stream. The people on the lower Teche have

no hesitancy in stating that this opposition is largely due to commercial rivalry. There is also no question that a large part of the opposition comes, at least, indirectly, from the Union Rice & Irrigation Co. This company has a very extensive pumping plant located at Washington, and contemplates, according to the map issued by it, to extend its canals practically throughout the entire region lying between Vermilion and Calcasieu Rivers as far south as the inter-coastal canal. This office had at one time practically decided to submit an adverse recommendation concerning the improvement on account of this opposition. Recent developments have, however, shown that there is a strong sentiment in favor of the improvement, and while the Government is not in position to expend money for improving waterways where the people do not desire the work to be done, the latest information is to the effect that a majority of the people are in favor of the improvement.

43. Considering the value of the land between the Teche and the Atchafalaya which can be reclaimed if this plan is adopted, the improvement which will follow in portions of Bayous Cocodrie and Boeuf, the great betterment of sanitary conditions along the Teche, and the commercial benefits to both the Courtableau and upper Teche, it is believed that the opposition of parties to the improvement should not be allowed to prevail. The locality is, therefore, regarded as worthy of improvement, and it is recommended that the improvement be made in accordance with the plan indicated, of a movable dam in Bayou Courtableau and a lock and dam in the Teche at Arnaudville.

Respectfully submitted.

LANSING H. BEACH,
Lieutenant Colonel, Corps of Engineers.

[For report of Board of Engineers for Rivers and Harbors on survey, see p. 3.]

SUPPLEMENTAL REPORT ON SURVEY OF BAYOU TECHE, LA.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
New Orleans, La., April 27, 1912.

SIR: I have to respectfully submit the following report of survey of Bayou Teche, La., being supplemental to the report of June 10, 1911, upon this subject. A supplementary report is also submitted under this date concerning the survey of Bayou Courtableau, the improvement of that stream and of the upper Teche being so intimately connected that they must be considered together.

2. In the report upon the Courtableau it is stated that conditions have changed since the submission of the former report. All opposition to the improvement has been withdrawn, permission has been granted to the State board of engineers for the Atchafalaya Basin, and the Red River, Atchafalaya and Bayou Boeuf Levee districts to build a levee across the mouth of Bayou Courtableau, and the levee boards and State engineers expect to provide drainage outlets by way of Big Bayou Fordoche and Bayou Teche. The plans of the State board of engineers for Bayou Teche have not yet been completed and, owing to the present flood stage of the Mississippi, the State authori-

ties concerned will be unable to give any attention to the matter for probably some months to come. Under these circumstances, it has been considered preferable to forward the report with statement of conditions to date rather than to await development of plans to be adopted.

3. The members of the State board of engineers say informally that the establishment of a drainage outlet from Bayou Courtableau through Bayou Teche involves the adoption either of a plan similar to that recommended in the report of this office of June 10, or one of more extensive dredging so as to provide a full channel without a lock at Arnaudville, or dam at Port Barre. In any case, the work will have to be in line with the improvement for the upper Teche already recommended by this office.

4. This work by the State authorities will amount to a substantial cooperation with the United States in undertaking the work, and the recommendation previously made is, therefore, modified to recommend the improvement of the Teche between Arnaudville and Bayou Courtableau, the details of the method and the manner of doing the work to be determined by the Chief of Engineers and Secretary of War, after due consideration of the plans which will be presented by the Louisiana authorities and the extent of their cooperation determined.

5. With regard to that portion of the Teche below New Iberia, its large traffic and bad condition urgently call for its improvement by dredging so as to provide a minimum channel of 8 feet in depth, with 100 feet bottom width. This is considered as necessary to accommodate the commerce now upon the stream, which commerce would be, it is believed, materially increased by the establishment of that channel. It is well known that the commerce of both New Iberia and Jeanerette has suffered materially, and that in many cases business has experienced delay and loss on account of the shallow water.

6. The commerce of the Teche for 1910-11 shows practically the same results as for 1909, given in the report of June 10, and is as follows:

	Tons.	Value.
1910.....	857,804	\$6,890,203
1911.....	1,016,116	6,581,700

There are operating regularly on the Teche six different lines of steamers as follows:

Bradford Transportation Co. (two steamboats).

Steamer *Ben Hur*.

Southern Pacific Co. (two barge lines—one from Morgan City, one from Baton Rouge).

Steamer *B. A. Boyle* and barges.

Barbour Line (four steamboats and barges).

There were until recently seven, one line having been discontinued, owing to the destruction of the steamer *Trudeau* by fire.

In addition to these there are some 25 other boats operating upon the bayou but not upon schedule.

7. Practically all this commerce may be considered as existing between New Iberia and the mouth, the proportion above New

Iberia being very small, there being no regular lines plying as yet above that point.

8. Cross sections,¹ which may be regarded as typical of this stream at the different points, are appended hereto, showing that great difficulty must be encountered, especially in the upper reaches, due to the narrow width of channel and the sloping bottom. These conditions leave scant width for boats in passing and greatly obstruct navigation on account of the suction, boats being unable to make the same speed that they could if the water were deeper. A glance at these cross sections, upon which is shown the channel recommended, will show the improvements which will result if the channel recommended is adopted.

9. The recommendation made in the report of June 10, 1911, is therefore repeated, as it is believed that, unless a channel at least 8 feet in depth with a bottom width of 100 feet is provided, the waterway will gradually lose a large portion of the commerce which it now possesses, while the construction of such a channel will lead to a material increase in the traffic.

Very respectfully,

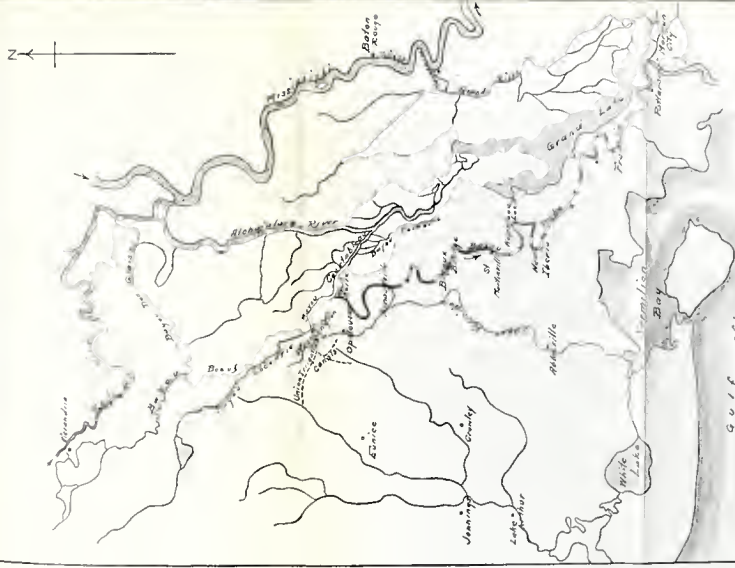
LANSING H. BEACH,
Lieutenant Colonel, Corps of Engineers.

The CHIEF OF ENGINEERS, UNITED STATES ARMY.

¹ Not printed.







Gulf of Mexico

PORTION OF LOUISIANA
SHOWING
AND
REPARABLE UNDER THE DIRECTION OF

CONNECTING STREAMS

L.T. COL. LANSING H. BEACH,
CORPS OF ENGINEERS, U.S.A.

Scale 1:50,000
J.L. DICKET, JR. ENGR.

U.S. ENGINEER OFFICE
NEW ORLEANS, LA. JUNE 10, 1911.
APPROVED
LANSING H. BEACH
LT. COL. CORPS OF ENGINEERS U.S.A.
TO ACCOMPANY REPORT OF JUNE 10, 1911.
TO THE CHIEF OF ENGINEERS.

